Appendix K

Migratory Bird Treaty Act Issues, Natural Resource Management Activities, and Maintenance and Project Activities at the Rocky Flats Site

This page intentionally left blank

LMS/RFS/S04511

Migratory Bird Treaty Act Issues, Natural Resource Management Activities, and Maintenance and Project Activities at the Rocky Flats Site

September 2008

U.S. Department of Energy

Office of Legacy Management

Work Performed Under DOE Contract No. DE–AM01–07LM00060
for the U.S. Department of Energy Office of Legacy Management.

This page intentionally left blank

LMS/RFS/S04511

Migratory Bird Treaty Act Issues, Natural Resource Management Activities, and Maintenance and Project Activities at the Rocky Flats Site

Predecisional Draft

September 2008

This page intentionally left blank

Contents

This page intentionally left blank

1.0 Background

The Rocky Flats Site (Rocky Flats) is under the jurisdiction of the U.S. Department of Energy (DOE) Office of Legacy Management (LM). S.M. Stoller Corporation conducts long-term surveillance and maintenance activities at Rocky Flats under the Legacy Management Support contract. Natural resource management activities and maintenance/project activities at Rocky Flats have the potential to impact migratory birds. These activities are conducted as part of the Rocky Flats surveillance and maintenance activities, which include activities conducted pursuant to the Rocky Flats Legacy Management Agreement (RFLMA). RFLMA established the regulatory framework to implement the final response action selected and approved in the Rocky Flats Corrective Action Decision/Record of Decision (CAD/ROD) under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), the Resource Conservation and recovery Act, and the Colorado Hazardous Waste Act to ensure that the response action remains protective of human health and the environment.

Migratory birds, as well as their eggs and nests, are protected under the Migratory Bird Treaty Act (MBTA). DOE signed a Memorandum of Understanding with the U.S. Fish and Wildlife Service (USFWS) on August 6, 2006, to strengthen migratory bird conservation through enhanced collaboration between the two agencies. The Memorandum of Understanding meets the requirements under Section 3 of Executive Order 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds.*

Unpermitted "take" of migratory birds or their eggs, which also may result from nest destruction, is prohibited under the MBTA (Migratory Bird Permit Memorandum, USFWS, April 15, 2003, Appendix A). The regulatory definition of "take" is to pursue, hunt, shoot, wound, kill, trap, capture, or collect; or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect. Under the regulations of the MBTA, depredation permits are required for the destruction of any active migratory bird nests. "Active" nests are defined as those with eggs or birds in them. Nests that are in the process of being constructed or nests that have been abandoned after a breeding season are not active nests (they are inactive). The MBTA does not prohibit the destruction of a bird nest alone (an inactive nest), provided that no possession occurs during the destruction. No permit is needed for this activity. Preventing the birds from nesting by knocking down unfinished nests is acceptable to the USFWS, which considers this to be nonlethal harassment. Continuing to knock down nests that are in the process of being built (prior to occupancy) will eventually persuade the birds to nest elsewhere. No permits are required for this activity (MNDOT 2008).

The MBTA is an applicable or relevant and appropriate requirement (ARAR) identified in the CAD/ROD in accordance with CERCLA requirements. For CERCLA response actions conducted on site, the substantive requirements of ARARs must be met, but administrative requirements, including any administrative requirement to obtain permits, are not required to be met. Thus, while activities to implement the CERCLA response action at Rocky Flats do not require specific permits, the following procedure will facilitate consultation with the USFWS and the RFLMA parties to determine appropriate actions if destruction of active nests is required to properly implement the remedy.

Under the MBTA, the USFWS may issue nest depredation permits, which allow a permittee to remove an active nest. The USFWS, however, issues few permits and only under specific

circumstances, usually related to human health and safety. Obtaining a nest depredation permit is unlikely and can be a time-consuming process that may take days to weeks. The best way to implement the MBTA is to remove vegetation outside of the active breeding season, which typically falls between April and August, depending on the species. Public awareness of the MBTA has grown in recent years, and most MBTA enforcement actions are the result of a concerned member of the community reporting a violation.

2.0 Migratory Birds and Raptors

The active breeding season for most migratory bird species in Colorado is between April 1 and August 15, which coincides with the peak construction season. It is recommended that vegetation removal for projects be conducted during the non-breeding season (August 16–March 31) to avoid the loss of any potentially active nests. If nests are active, activities that would directly impact the nest, or that would encroach close enough to cause adult birds to abandon the nest during the breeding season, is restricted in accordance with this procedure. A nest survey will be conducted to determine the activity status and what species use the nests if an activity is conducted during the breeding season.

If an active raptor nest is identified within the project area, buffer zones and seasonal restrictions surrounding raptor nests (Appendix B) developed by the Colorado Division of Wildlife (Craig 2002) will be followed. The Colorado Division of Wildlife has not established recommended buffer zones for great horned owls, a species that readily adapts to urban activities. Buffers and seasonal restrictions have been established for red-tailed and Swainson's hawks and many other species of raptors. If followed, the buffer zones and seasonal restrictions should curtail disturbance to nesting raptors and preclude nest abandonment by the raptors. Although the buffers are not required, project activities within the buffers could cause the abandonment of a nest, which may be considered a take. Thus, buffers should be planned and used to avoid nest abandonment. Depending on the species and the amount of existing human activity around the nest, the Colorado Division of Wildlife may reduce the buffer width on a case-by-case basis. As a precaution, vegetation should be removed outside of the breeding season to ensure that raptors, their eggs, or young would not be harmed.

2.1 Rocky Flats Activities That Have the Potential to Impact Migratory Birds

- Herbicide applications,
- Mowing and weed-whacking operations,
- Construction activities such as road regrading and excavations,
- Activities that involve driving vehicles or equipment off-road in grassy or forested areas,
- Tree cutting, trimming, and thinning; underbrush clearing operations, willow stake cutting,
- Maintenance activities on structures and buildings, monitoring equipment,
- General ongoing operations around garages, storage sheds, and other buildings where doors are kept open for lengths of time and birds are able to enter and exit freely.

3.0 Recommended Avoidance and Minimization Procedures for Different Types of Activities

The active nesting season for most migratory bird species in Colorado is between April 1 and August 15, which coincides with the peak season for natural resource management actions and construction projects. Several state and federal agencies have adopted avoidance strategies to preclude a violation of the MBTA. The following strategies shall be used at Rocky Flats for activities that have potential impact.

3.1 Construction Projects

Construction project activities would include excavation and earthmoving, off-road work (potentially something as simple as driving a vehicle off the roads during the breeding season), building projects, maintenance activities, or other similar activities.

The following step-down approach is recommended and is consistent with state and federal recommendations to avoid disturbing active bird nests during construction projects:

1. Conduct habitat-disturbing activities (tree removal, grading, scraping, grubbing, etc.) in the non-breeding season (August 16 to March 31) to the extent practicable.
2. If work activities are planned to occur between April 1 and August 15, remove or alter vegetation within construction footprints prior to April 1 to discourage nesting within areas scheduled for summer construction. Removal or alteration of vegetation will also discourage nesting in areas adjacent to the construction footprints and encourage birds to nest in more suitable habitat. Vegetation-altering activities can include mowing or and trimming to a height of 6 inches or less, grazing vegetation to a height of 6 inches or less, disking, herbicide applications, or other similar activities.
3. Once vegetation has been removed or trimmed, appropriate measures, such as repeated mowing and trimming, should be implemented to ensure that vegetation does not grow more than 6 inches in height.
4. If activities 1–3 cannot be completed, preconstruction clearance surveys must be conducted during the nesting season to identify any active nests and implement avoidance measures for those nests. **Note**: If active nests are found during these surveys, those nests cannot be removed without a DOE-LM decision regarding obtaining a depredation permit from the USFWS. Work could be delayed until a permit is obtained, a CERCLA permit waiver is determined to be appropriate, or the fledglings leave the nest.

3.2 Vegetation Management Activities

The types of activities in this category include mowing, herbicide applications, brush clearing, grubbing of vegetation, tree trimming, forest thinning, and similar types of vegetation management activities. The following recommendations will help avoid disturbing active bird nests during vegetation management activities:

1. Conduct habitat-disturbing activities (mowing, herbicide applications, noxious weed control, brush clearing, tree trimming and thinning, etc.) in the non-breeding season (August 16 to March 31) to the extent practicable.
2. Because some of these vegetation management activities (mowing, herbicide applications, noxious weed control) are not effective unless conducted during the active growing season for some plants or projects, the following alternative is proposed:
    - If these activities cannot be completed during the non-breeding season, conduct pre-job briefings to educate personnel on the MBTA issues.
    - If ATVs or other vehicles are being used off-road in potential ground-nesting areas, inform the vehicle drivers of the potential for nesting birds in the area.
    - If birds flush in front of the vehicle as the work is being conducted, instruct workers to stop and investigate the location from which the bird flushed to determine if an active nest is present. If an active nest is present, workers will go around the nest and avoid disturbing it. If the nest is not active, they can proceed as normal.

    Because these activities generally access an area only once annually, there is minimal potential for take using this precautionary approach. Given the size of the areas where this type of work is being conducted (greater than 100 acres in some cases), it is impractical to do a pre-job walk-down survey of the areas. **Note**: An employee of the USFWS Rocky Mountain Arsenal National Wildlife Refuge has stated that they do not conduct pre-job walk-down surveys of their mowing or herbicide application areas (Nelson 2008).
3. For tree trimming and thinning or brush removal activities that must be conducted during the active breeding season, pre-job clearance surveys must be conducted to identify any active nests and implement avoidance measures for those particular nests. **Note**: If active nests are found during these surveys, those nests cannot be removed without a DOE-LM decision regarding obtaining a depredation permit from the USFWS. Work could be delayed until a permit is obtained, a CERCLA permit waiver is determined to be appropriate, or the fledglings leave the nest.

3.3 Building and Equipment Maintenance Activities

Many maintenance activities on buildings and equipment are conducted during the breeding season. Several species of protected birds may be found nesting on buildings, equipment, and other structures. No active nests are allowed to be disturbed or removed without a DOE-LM decision regarding obtaining a depredation permit from the USFWS. Work could be delayed until a permit is obtained, a CERCLA permit waiver is determined to be appropriate, or the fledglings leave the nest. The following recommendations will help to avoid disturbing active bird nests during building and equipment maintenance activities:

1. Try to conduct these activities during the non-breeding season.
2. Remove inactive nests from structures and equipment during the non-breeding season so that no nests are present for birds to move into.
3. If projects are going to be conducted during the breeding season, and nesting birds have previously been found in the work area and will likely be problematic, one option is to prevent the birds from nesting in those locations through various means. Contact the Stoller Rocky Flats ecologist for potential options.

3.4 Off-Road Monitoring Activities

Many of the well and surface water monitoring locations are in grassland areas and are accessed using ATVs. Because these "two tracks" are driven so infrequently, the vegetation often grows tall and could provide good nesting habitat for ground-nesting birds. If these activities cannot be completed during the non-breeding season (due to monitoring schedules and regulatory requirements), the following approach is recommended:

- Conduct pre-job briefings and annual training to educate personnel on the MBTA issues.
- If ATVs or other vehicles are being used off-road in potential ground-nesting areas, inform the vehicle drivers of the potential for nesting birds in these areas.
- If birds flush in front of the vehicle as the work is being conducted, instruct workers to stop and investigate the location from which the bird flushed to determine if an active nest is present. If an active nest is present, workers will go around the nest and avoid disturbing it. If the nest is not active, they can proceed as normal.

Because these activities generally access an area infrequently during the breeding season, there is minimal potential for take using this precautionary approach.

Note: Implementing these activities demonstrates a good-faith effort to avoid incidental violation of the MBTA but does not guarantee that migratory birds will not still nest in some areas despite these efforts. Additionally, depending on the elevation, weather, and species, the active nesting season may be earlier for species such as owls and raptors.

4.0 Training

Training of personnel regarding MBTA issues and this guidance will be conducted in two ways for projects at Rocky Flats.

- For one-time and short-term projects that have potential MBTA issues, pre-job briefings will include information on migratory bird issues and information from this guidance specific to that project. The pre-job briefing will include the information in this guidance, what to look for, what to do, and who to contact if any questions or issues arise.
- Field personnel who work at Rocky Flats on an ongoing basis will be required to complete an annual training on MBTA issues at the site. The training will include the information in this guidance, what to look for, what to do, and who to contact if any questions or issues arise.

5.0 Reporting and Record Keeping

Record keeping will be conducted through the use of the Project/Activity Evaluation form and the DOE-LM Rocky Flats Site Non-Routine Activity Evaluation form. Additionally, project-specific MBTA nesting bird surveys (clearance surveys) will be documented in writing and as applicable on maps. Results of nesting surveys and any requirements resulting from those

surveys will be provided in writing to project management prior to initiation of the project. According to the RFLMA, if any evidence of adverse biological conditions is observed, notification to RFLMA parties will be made in accordance with the RFLMA.

6.0 Who to Contact Regarding MBTA Issues at RFS

Jody Nelson
Senior Ecologist
(720) 377-9677 or (303) 994-2464

7.0 References

Craig, 2002. Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptor Nests, Colorado Division of Wildlife, Denver, Colorado, Updated January 18, 2002.

MNDOT (Minnesota Department of Transportation), 2008. *HPDP* [Highway Project Development Process] *Handbook*, Part II, Section D, "Fish and Wildlife," Appendix 5, "Swallow Procedure, Including Depredation Permit Guidance," available online at http://www.dot.state.mn.us/tecsup/xyz/plu/hpdp/book2sg/fish/fisha5.html, accessed March 17, 2008.

Nelson, Jody, 2008. Jody Nelson, senior ecologist, S.M. Stoller Corporation, telephone conversation with Lorenz Sollman, restoration specialist, U.S. Fish and Wildlife Service, Rocky Mountain Arsenal National Wildlife Refuge, April 1, 2008.

Appendix A

USFWS Migratory Bird Permit Memorandum

This page intentionally left blank

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Washington, Washington, D.C. 20240

MBPM-2
Date: APR 15, 2003

MIGRATORY BIRD PERMIT MEMORANDUM

SUBJECT: Nest Destruction

PURPOSE: The purpose of the memorandum is to clarify the application of the Migratory Bird Treaty Act (MBTA) to migratory bird nest destruction, and to provide guidance for advising the public regarding this issue.

POLICY: The MBTA does not contain any prohibition that applies to the destruction of a migratory bird nest alone (without birds or eggs), provided that no possession occurs during the destruction. To minimize MBTA violations, Service employees should make every effort to inform the public of how to minimize the risk of taking migratory bird species whose nesting behaviors make it difficult to determine occupancy status or continuing nest dependency.

The MBTA specifically protects migratory bird nests from *possession, sale, purchase, barter, transport, import,* and *export,* and *take.* The other prohibitions of the MBTA – *capture, pursue, hunt,* and *kill* – are inapplicable to nests. The regulatory definition of *take,* as defined by 50 CFR 10.12, *means to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect.* Only *collect* applies to nests.

While it is illegal to collect, possess, and by any means transfer possession of any migratory bird nest, the MBTA does not contain any prohibition that applies to the destruction of a bird nest alone (without birds or eggs), provided that no possession occurs during the destruction. The MBTA does not authorize the Service to issue permits in situations in which the prohibitions of the Act do not apply, such as the destruction of unoccupied nests. (Some unoccupied nests are legally protected by statutes other than the MBTA, including nests of threatened and endangered migratory bird species and bald and golden eagles, within certain parameters.)

However, the public should be made aware that, while destruction of a nest by itself is not prohibited under the MBTA, nest destruction that results in the unpermitted take of migratory birds or their eggs, is illegal and fully prosecutable under the MBTA.

Due to the biological and behavioral characteristics of some migratory bird species, destruction of their nests entails an elevated degree of risk of violating the MBTA. For example, colonial nesting birds are highly vulnerable to disturbance; the destruction of unoccupied nests during or near the nesting season could result in a significant level of take. Another example involves

ground nesting species such as burrowing owls and bank swallows, which nest in cavities in the ground, making it difficult to detect whether or not their nests are occupied by eggs or nestlings or are otherwise still essential to the survival of the juvenile birds. The Service should make every effort to raise public awareness regarding the possible presence of birds and the risk of violating the MBTA, the Endangered Species Act (ESA), and the Bald and Golden Eagle Protection Act (BGEPA), and should inform the public of factors that will help minimize the likelihood that take would occur should nests be destroyed (i.e., when active nesting season normally occurs).

The Service should also take care to discern that persons who request MBTA permits for nest destruction are not targeting nests of endangered or threatened species or bald or golden eagles, so that the public can be made aware of the prohibitions of the ESA and the BGEPA against nest destruction.

In situations where it is necessary (i.e., for public safety) to remove (destroy) a nest that is occupied by eggs or nestlings or is otherwise still essential to the survival of a juvenile bird, and a permit is available pursuant to 50 CFR parts 13 and 21, the Service may issue a permit to take individual birds.

John Williams

Director

Appendix B

Colorado Division of Wildlife Migratory Bird Permit Memorandum

This page intentionally left blank

APPENDIX B
RECOMMENDED BUFFER ZONES AND SEASONAL RESTRICTIONS FOR COLORADO RAPTOR NESTS

*These zones and seasonal restrictions are recommended as guidance and may be subject to change. They do not represent official Division policy

Prepared By
Gerald R. Craig
Colorado Division of Wildlife
Updated 1/18/02

Tolerance limits to disturbance varies among as well as within raptor species. As a rule, ferruginous hawks and golden eagles respond at greater distances to human activities than do ospreys and kestrels. Some individuals within a species also habituate and tolerate human activity at a proximity that would cause the majority of the species to abandon their nests. Other individuals become sensitized to repeated encroachment and react at greater distances. The tolerance of a particular pair may change when a mate is replaced with a less tolerant individual and may cause the pair to react to activities that were previously ignored. Responses will also vary depending upon the reproductive stage. Although the level of stress is the same, the pair may be more sensitive during egg laying and incubation and more demonstrative when the chicks hatch.

The term "disturbance" is also ambiguous and experts disagree on what actually constitutes a disturbance. Reactions may be as subtle as elevated pulse rate and as extreme as vigorous defense or abandonment. Impacts of disturbance may not be immediately evident. A pair of raptors may respond to human intrusion by defending the nest, but well after the disturbance has passed, the male may remain in the vicinity for protection rather than forage to feed the nestlings. Golden Eagles rarely defend their nests, but merely fly a half mile or more away and perch and watch. Chilling and over heating of eggs or chicks and starvation of nestlings can result from human activities that appeared not to have caused an immediate response.

A 'holistic' approach is recommended when protecting raptor habitat. While it is important for land managers to focus on protecting nest sites, equal attention should focus on defining important foraging areas that support the pairs' nesting effort. Hunting habitat of many raptor species are extensive and may necessitate interagency cooperation to assure the continued nest occupancy. Unfortunately, basic knowledge of habitat use is lacking and may require documentation through telemetry investigations or intensive observation. Telemetry is expensive and may be disruptive so a more practical approach is to assume that current open space is important and should be protected.

Although there are exceptions, the buffer areas and seasonal restrictions suggested here reflect an informed opinion that if implemented, should assure that the majority of individuals within a species will continue to occupy the area. Measurements are somewhat imprecise (fractions of a mile) and reflect the need to maintain some flexibility to adjust buffer zones depending upon intervening terrain and vegetation screens that obscure the activity. This document is intended to be modified and refined as additional information becomes available, hence the need for a revision date.

ERO Project #4091

BALD EAGLE

Nest Site:

Year-round closure to surface occupancy * (beyond that which historically occurred in the area) within 1/4-mile radius of nest. No human encroachment from November 15 through July 31 within 1/2-mile radius of the nest. This closure is more extensive than the Northern States Bald Eagle Recovery Plan due to the generally open habitat used by Colorado's nesting bald eagles. Aside from four Colorado sites in coniferous forests, all others are in cottonwood riparian zones that don't have the vegetational density, and therefore obscurity offered by the habitats in the lake states. Recent evidence suggests that pairs nesting at lower elevations frequent and maintain their nests throughout the year. If it is necessary to work within the 1/2-mile buffer, the intrusion should be restricted to August 15 through October 15.

Winter Night Roost:

Activity should be eliminated within 1/4-mile radius of winter roosts between November 15 and March 15. If periodic visits (such as oil well maintenance work) are required within the buffer zone after development, activity should be restricted to the period between 1000 and 1400 hours from November 15 to March 15. Limited restrictions may be necessary out to 1/2 mile if there is a direct line of sight from the roost to the activities.

Hunting Perch:

Diurnal Perches associated with important foraging areas should also be protected from human encroachment. Preferred perches may be at varying distances from human encroachment and buffer areas will vary. However, at least two management plans recommend zones that range from 1/8 mile (200 meters) to 1/4 mile (400 meters) depending upon topographic or vegetational screening.

GOLDEN EAGLE

Nest Site:

No surface occupancy * (beyond that which historically occurred in the area) within 1/4-mile radius of the nest site and associated alternate nests. Seasonal restriction to human encroachment within 1/4 mile of the nest and any alternate nests from February 1 to July 15.

OSPREY

Nest Site:

No surface occupancy * (beyond that which historically occurred in the area) within 1/4 mile of the nest site. Seasonal restriction to human encroachment within 1/4 mile of the nest from April 1 to August 31. Some osprey populations have habituated and are tolerant to human activity in the immediate vicinity of their nests.

FERRUGINOUS HAWK

Nest Site:

No surface occupancy * (beyond that which historically occurred in the area) within 1/2-mile radius of the nest site, and associated alternate nests. Seasonal restriction to human encroachment within 1/4 mile of the nest and any alternate nests from February 1 to July 15. This species is especially prone to nest abandonment during incubation if disturbed.

ERO Project #4091

RED-TAILED HAWK

Nest Site:

No surface occupancy * (beyond that which historically occurred in the area) within 1/3-mile radius of the nest site, and associated alternate nests. Some members of this species have adapted to urbanization and may tolerate human habitation to within 200 yards of their nest. Development that encroaches on rural sites is likely to cause abandonment. Seasonal restriction to human encroachment should be in effect from March 1 to July 15.

SWAINSON'S HAWK

Nest Site:

No surface occupancy * (beyond that which historically occurred in the area) within 1/4-mile radius of the nest site, and associated alternate nests. Some members of this species have adapted to urbanization and may tolerate human habitation to within 100 yards of their nest. Seasonal restriction to human encroachment within 1/4 mile of the nest from April 1 to July 15.

PEREGRINE FALCON

Nest Site:

No surface occupancy * (beyond that which historically occurred in the area) within 1/2 mile of the nest site. Seasonal restriction to human encroachment within 1/2 mile of the nest cliff(s) from March 15 to July 31. A 1-mile buffer with a closure from February 1 to August 31 was originally stipulated in the approved Recovery Plan, but recent field evidence suggests that the zone can be reduced to 1/2 mile. Due to propensity to relocate nest sites, sometimes up to 1/2 mile along cliff faces, it is more appropriate to designate 'Nesting Areas' that encompass the cliff system and a 1/2-mile buffer around the cliff complex.

PRAIRIE FALCON

Nest Site:

No surface occupancy * (beyond that which historically occurred in the area) within 1/2-mile radius of the nest site.

NORTHERN GOSHAWK

Reynolds et al. (1993) proposed 30 acres for the nest, a post-fledging family area of 420 acres, and a foraging area of 5,400 acres in size that encompasses habitat for squirrels, rabbits, jays, woodpeckers, and grouse. For purposes here, it seems that a buffer of 1/2 mile around the nest should protect the integrity of the nesting and post-fledging area. Occupancy of the nesting and brood-rearing area takes place from early March through late September.

BURROWING OWL

Nest Site:

No human encroachment or disturbance within 75 yards of the nest site from April 1 through July 31. This period is necessary to avoid disturbing nesting owls. However, owls may be present at burrows up to a month before egg laying and several months after young have fledged. Therefore, it is recommended that efforts to eradicate prairie dogs or destroy abandoned towns not occur between March 1 and October 31 when owls may be present. Although owls may occur throughout a prairie dog colony, there is a propensity for them to frequent the colony margins, and buffer zones should be applied to

the colony perimeter. Measures that protect and enhance prairie dog colonies will benefit this species.

Buffers Documented in the Literature

Perch Buffers

The following buffers for perches were recommended by T. Holmes (1994) to prevent flushing of 90% of raptors wintering in rangeland and agricultural habitats.

* Surface occupancy means non-human habitation, examples would be oil and gas wells, roads, tracks, trails, etc.

ERO Project #4091

REFERENCES

Call, M. 1979. Habitat management guides for birds of prey. Technical Note No. 338, U.S. Bureau of Land Management, Denver Service Center, Denver, CO. 69pp.

Greater Yellowstone Bald Eagle Working Group. 1996. Greater Yellowstone Bald Eagle Management Plan: 1995 update. Wyoming Game and Fish Department, Lander, WY. 47 pp.

Grier, J. W., F. J. Gramlich, J. Mattsson, J. E. Mathisen, J. V. Kussman, J. B. Elder, and N. F. Green. 1983. The bald eagle in the northern United States. Bird Cons. 1-44-66.

Holmes, Tamara L. 1993. Behavioral responses of grassland raptors to human disturbance MS Thesis. Colo. State Univ., Ft. Collins. 62p.

Holthuijzen, A. M. A., W. G. Eastland, A. R. Ansell, M. N. Kochert, R. D. Williams, and L. S. Young. 1990. Effects of blasting on behavior and productivity of nesting prairie falcons. Wildl. Soc. Bull. 18:270-281.

Martin, D. J. 1973. Selected aspects of burrowing owl ecology and behavior. Condor 75:446-456.

Northern States Bald Eagle Recovery Team. 1983. Northern States Bald Eagle Recovery Plan. U.S. Fish and Wildlife Service. 75p.

Reynolds, Richard, R. T. Graham, H. M. Reiser. 1992. Management recommendations for the northern goshawk in the southwestern United States. Gen. Tech. Rep. RM-217. Ft. Collins, CO. U.S. Dept. of Agri., Forest Service, Rocky Mountain Forest and Range Experiment Station. 90pp.

Richardson, Cary T. and C. K. Miller. 1997. Recommendations for protecting raptors from human disturbance: a review. Wildl. Soc. Bull. 25(3):634-638.

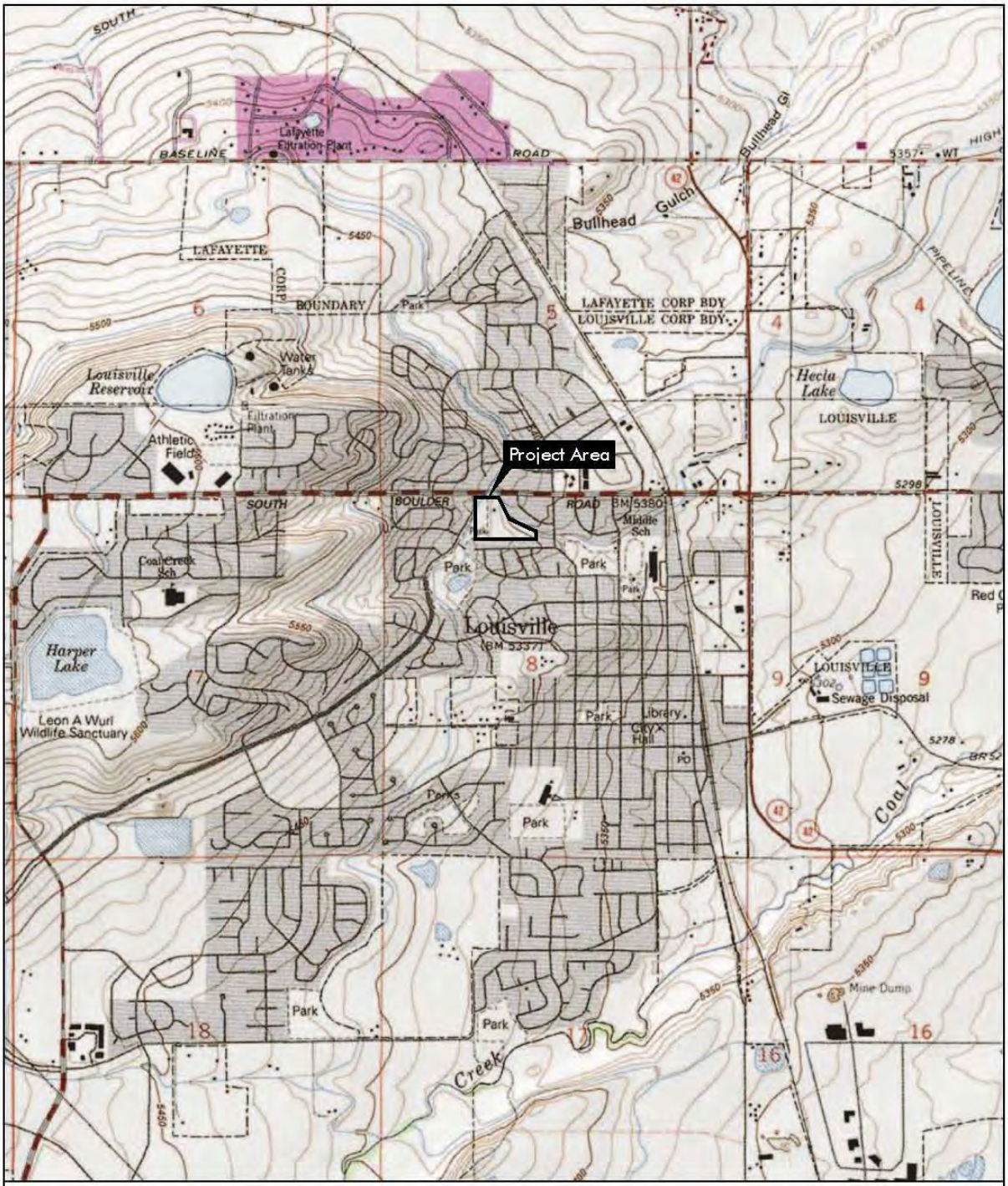
Rocky Mountain/Southwest Peregrine Falcon Recovery Team. 1984. American peregrine falcon Rocky Mountain/Southwest population recovery plan. U.S. Fish and Wildlife Serv. 105 pp.

Squires, J. H., S. H. Anderson, and R. Oakleaf. 1993. Home range size and habitat use patterns of nesting prairie falcons near oil developments in northeastern Wyoming. J. Field Ornithology. 64:1-10.

Swenson, J. E. 1979. Factors affecting status and reproduction of ospreys in Yellowstone National Park. J. Wildl. Manage. 43:595-601.

Thomsen, L. 1971. Behavior and ecology of burrowing owls on the Oakland Municipal Airport. Condor 73:177-192.

ERO Project #4091



ERO

ERO Resources Corp.
1842 Clarkson Street
Denver, CO 80218
(303) 830-1188
Fax: (303) 830-1199

Goodhue Ditch at 200 W. South Boulder Road

NW ¼ of Section 8, T1S, R69W
UTM Coordinates: Zone 13; 487995mE, 4426189mN
USGS Louisville, CO Quadrangle
Boulder County, Colorado

0 2000 4000 feet

1 Inch = 2,000 Feet

N

Figure 1
Site Location

Prepared for: RE Development
File: 4091 Figure 1.pdf
January 2008

ERO

ERO Resources Corp.
1842 Clarkson Street
Denver, CO 80218
(303) 830-1188
Fax: (303) 830-1199

Goodhue Ditch at 200 W. South Boulder Road

Aerial Photograph: USGS 2005

0 300 600 feet

1 Inch = 300 Feet

N

Figure 2
Site Plan

Prepared for: RE Development
File: 4091 Figure 2.pdf
January 2008

GOODHUE DITCH AT 200 W. SOUTH BOULDER ROAD
PHOTO LOG
JANUARY 2, 2008

Photo 1 - View of the grassy field with the riparian habitat along the Goodhue Ditch in the background. View is to the west.

Photo 2 - View of the Goodhue Ditch, looking to the north.

GOODHUE DITCH AT 200 W. SOUTH BOULDER ROAD
PHOTO LOG
JANUARY 2, 2008

Photo 3 - View of the Goodhue Ditch, looking to the south.

This page intentionally left blank